

**REMARKS**

This communication is a full and timely response to the final Office Action dated February 14, 2005 (Paper No./Mail Date 020905), the period for response being extended through a Request for Two Month Extension of Time submitted herewith. By this communication, claims 4, 6, 7, and 10 are canceled without prejudice or disclaimer of the underlying subject matter and claims 1, 5, and 11 have been amended.

Claim 1 has been amended to recite mark detection means for detecting the mark images in the second anterior-segment image; the torsion-detection means obtains, based on the characteristic points in the first anterior-segment image and the characteristic points in the second anterior-segment image picked up before corneal ablation, the torsion-error angle that occurred before the corneal ablation, the torsion-correction means performs any one of rotation of a patient's head and correction of control data on the irradiation optical system so as to correct the torsion-error angle that occurred before the corneal ablation, the torsion-detection means obtains, based on the mark images in the second anterior-segment image after correction of the torsion-error angle before the corneal ablation and the mark images in the second anterior-segment image picked up during the corneal ablation, the torsion- error angle that occurred during the corneal ablation, and the torsion-correction means performs any one of stop of the irradiation of the laser beam and correction of the control data on the irradiation optical system so as to correct the torsion-error angle that occurred during the corneal ablation. Support for the subject matter recited in claim 1 can be found variously throughout the specification, for example, in paragraphs [0040], [0044], and [0045] of corresponding U.S. Patent Application Publication No. 2004-0044333. No new matter has been added.

Claim 5 has been amended to improve idiomatic English and form. No new matter has been added.

Claim 11 recites a mark detection unit which detects the mark images in the second anterior-segment image; the torsion-detection unit obtains, based on the characteristic points in the first anterior-segment image and the characteristic points in the second anterior-segment image picked up before corneal ablation, the torsion-error angle that occurred before the corneal ablation, the torsion-correction unit performs any one of rotation of a patient's head and correction of control data on the irradiation optical system so as to correct the torsion-error angle that occurred before the corneal ablation, the torsion-detection unit obtains, based on the mark

images in the second anterior-segment image after correction of the torsion-error angle before the corneal ablation and the mark images in the second anterior-segment image picked up during the corneal ablation, the torsion-error angle that occurred during the corneal ablation, and the torsion-correction unit performs any one of stop of the irradiation of the laser beam and correction of the control data on the irradiation optical system so as to correct the torsion-error angle that occurred during the corneal ablation. Support for the subject matter recited in claim 11 can be found variously throughout the specification, for example, in paragraphs [0040], [0044], and [0045] of corresponding U.S. Patent Application Publication No. 2004-0044333. No new matter has been added.

Entry of this Amendment is proper under 37 C.F.R. §1.116 since the amendment: (a) places the application in condition for allowance (for the reasons discussed herein); (b) does not raise any new issues requiring further search and/or consideration; (c) satisfies a requirement of form asserted in the previous Office Action; and (d) places the application in better form for appeal, should an appeal be necessary. The amendment is necessary and was not earlier presented because it is made in response to arguments raised in the final rejection. Entry of this amendment is respectfully requested. Reexamination and reconsideration in light of the above amendments and the following remarks is respectfully requested.

Claims 1, 5, and 11 are pending where claims 1 and 11 are independent.

### **Rejections Under 35 U.S.C. §112**

Claims 1-11 were rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement. Applicant respectfully traverses this rejection. However, in an effort to expedite prosecution, claims 1 and 11 have been amended to remove “third anterior-segment” and second torsion detection means. Claim 4 has been canceled without prejudice, thus the rejection to claim 4 is moot. Accordingly, Applicant respectfully requests that the rejection of claims 1-11 under 35 U.S.C. §112, first paragraph be withdrawn.

### **Rejections Under 35 U.S.C. §102**

Claims 1, 4-6, and 11 were rejected under 35 U.S.C. §102(e) as anticipated by *Gray et al.*--U.S. Patent No. 6,702,806. Applicant respectfully traverses this rejection.

Claim 1 recites a corneal surgery apparatus for ablating a cornea of a patient’s eye by irradiation of a laser beam, the apparatus comprising an irradiation optical system for irradiating

the laser beam onto the cornea; image-pickup means for picking up an image of an anterior segment of the eye in a condition where the laser beam is irradiated; characteristic point detection means for detecting characteristic points common to a first anterior-segment image of the eye picked up in a condition where measurement data for determining corneal ablation data of the eye is obtained and a second anterior-segment image of the eye picked up by the image-pickup mean, the second anterior-segment image including images of marks for torsion-detection provided outside an ablation area of the eye; mark detection means for detecting the mark images in the second anterior-segment image; torsion-detection means for obtaining a torsion-error angle of the eye; and torsion-correction means for correcting the obtained torsion-error angle, wherein the torsion-detection means obtains, based on the characteristic points in the first anterior-segment image and the characteristic points in the second anterior-segment image picked up before corneal ablation, the torsion-error angle that occurred before the corneal ablation, the torsion-correction means performs any one of rotation of a patient's head and correction of control data on the irradiation optical system so as to correct the torsion-error angle that occurred before the corneal ablation, the torsion-detection means obtains, based on the mark images in the second anterior-segment image after correction of the torsion-error angle before the corneal ablation and the mark images in the second anterior- segment image picked up during the corneal ablation, the torsion- error angle that occurred during the corneal ablation, and ~~second~~ the torsion-correction means performs any one of stop of the irradiation of the laser beam and correction of the control data on the irradiation optical system so as to correct the torsion-error angle that occurred during the corneal ablation.

Claim 11 recites a corneal surgery apparatus for ablating a cornea of a patient's eye by irradiation of a laser beam, the apparatus comprising an irradiation optical system for irradiating the laser beam onto the cornea; an image-pickup unit which picks up an image of an anterior-segment of the eye in a condition where the laser beam is irradiated; a characteristic point detection unit which detects characteristic points common to a first anterior-segment image of the eye picked up in a condition where measurement data for determining corneal ablation data of the eye is obtained and a second anterior-segment image of the eye picked up by the image-pickup unit, the second anterior- segment image including images of marks for torsion-detection provided outside an ablation area of the eye; a mark detection unit which detects the mark images in the second anterior-segment image; a torsion-detection unit which obtains a torsion-error angle of the eye; and a torsion-correction unit which corrects the obtained torsion-error

angle, wherein the torsion-detection unit obtains, based on the characteristic points in the first anterior-segment image and the characteristic points in the second anterior-segment image picked up before corneal ablation, the torsion-error angle that occurred before the corneal ablation, the torsion-correction unit performs any one of rotation of a patient's head and correction of control data on the irradiation optical system so as to correct the torsion-error angle that occurred before the corneal ablation, the torsion-detection unit obtains, based on the mark images in the second anterior-segment image after correction of the torsion-error angle before the corneal ablation and the mark images in the second anterior-segment image picked up during the corneal ablation, the torsion-error angle that occurred during the corneal ablation, and the torsion-correction unit performs any one of stop of the irradiation of the laser beam and correction of the control data on the irradiation optical system so as to correct the torsion-error angle that occurred during the corneal ablation.

In summary, claim 1 comprises torsion-detection means and torsion-correction means and claim 11 comprises a torsion-detection unit and a torsion correction unit. As a result, the marks used for torsion detection are not required at the time the measurement data is obtained. Furthermore, at the time of surgery, the orientation of the marks used for torsion detection need not be fixed.

*Gray* discloses a system for corrective laser surgery on an eye which provides alignment marks 41 and 42 in predetermined directions (e.g., at the "3 o'clock" and "9 o'clock" positions) on the sclera of an eye of a patient placed in a seated upright position. The system photographs an image of an anterior segment of the eye of the patient placed in a prone position, superimposes a graphical reticle 58 on the photographed anterior-segment image, and moves the graphical reticle 58 to superimpose a part thereof on the alignment marks 41 and 42 to detect an orientational change of a correction profile. In addition, while there is a time interval between the measurement-data obtainment for obtaining the corneal ablation data and the surgery (corneal ablation), *Gray* requires a strict coincidence between the marks for torsion-detection at the time of the measurement-data obtainment and those at the time of the surgery.

*Gray*, however, fails to disclose, teach, or suggest at least torsion-correction means or torsion-detection means, as recited in claim 1, nor a torsion-correction unit or torsion-detection unit, as recited in claim 11. In fact, *Gray* fails to contemplate the possibility of a torsion error occurring during the surgical process. Accordingly, the system and method disclosed by *Gray* cannot achieve the results discussed above.

To properly anticipate a claim, the document must disclose, explicitly or implicitly, each and every feature recited in the claim. *See Verdegall Bros. v. Union Oil Co. of Calif.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). *Gray* fails to disclose, teach, or suggest every element recited in independent claims 1 and 11, therefore these claims are not anticipated by *Gray*. Accordingly, Applicant respectfully requests that the rejection of claims 1 and 11 under 35 U.S.C. §102 be withdrawn, and these claims be allowed.

Claim 5 depends from claim 1. By virtue of this dependency, Applicant submits that claim 5 is allowable for at least the same reasons given above with respect to claim 1. In addition, Applicant submits that claim 5 is further distinguished over *Gray* by the additional elements recited therein, and particularly with respect to the claimed combination. Applicant respectfully requests, therefore, that the rejection of claim 5 under 35 U.S.C. §102 be withdrawn, and this claim be allowed.

#### **Rejections Under 35 U.S.C. §103**

Claim 7 was rejected under 35 U.S.C. §103(a) as unpatentable over *Gray* in view of *Oltean et al.*—U.S. Patent No. 6,209,307. As discussed above, claim 7 has been canceled without prejudice. Thus, the rejection of claim 7 is moot. Accordingly, Applicant respectfully requests that the rejection of claim 7 under 35 U.S.C. §103(a) be withdrawn.

Claim 10 was rejected under 35 U.S.C. §103(a) as unpatentable over *Gray* in view of *Frey et al.*—U.S. Patent No. 5,752,950. As discussed above, claim 10 has been canceled without prejudice. Thus, the rejection of claim 10 is moot. Accordingly, Applicant respectfully requests that the rejection of claim 10 under 35 U.S.C. §103(a) be withdrawn.

#### **Conclusion**

Based on at least the foregoing amendments and remarks, Applicants submit that claims 1, 5, and 11 are allowable, and this application is in condition for allowance. Accordingly, Applicants request favorable reexamination and reconsideration of the application. In the event the Examiner has any comments or suggestions for placing the application in even better form, Applicants request that the Examiner contact the undersigned attorney at the number listed below.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-0013, under Order No. WEN-0021 from which the undersigned is authorized to draw.

Dated: July 14, 2005

Respectfully submitted,

By \_\_\_\_\_

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